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Publication date:
2010

Document version
Tidlig version også kaldet pre-print

Abstract, ICOPA XII, Melbourne, Australia
15th - 20th August 2010

Abstract ID: ABS3R-58ME6-NCMUM-96KRE

SEDIMENTATION OF HELMINTH EGGS IN LOW QUALITY WATER TO BE USED FOR IRRIGATION IN AGRICULTURE

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Irrigation with low quality water in agriculture is increasing worldwide due to water shortage. Low quality water often contains pathogens like helminth parasites and irrigation with such water may therefore negatively affect food safety and human health. The present study aimed to determine the sedimentation rate of helminth eggs in tap- and waste water. Eggs of *Ascaris suum, Trichuris suis* and *Oesophagostomum* sp. were collected from naturally infected pigs by sieving faeces (500, 212, 90, 38 µm sieves) and flotation (NaCl-glucose). Between 500-600 eggs of each parasite was added to 2L Owen tubes filled with either tap-water or inlet water from a sewage plant. The sedimentation velocity of the eggs was determined by counting eggs in 10 sub-samples collected at varying time intervals (4 min to 22 hrs) from the Owen tube. Preliminary data for *A. suum* showed a sedimentation velocity of 0.054-0.060 mm/s in tap-water and 0.105-0.112 mm/s in sewage water. Theoretical sedimentation velocities of the human roundworms *A. lumbricoides* (0.441-0.496 mm/s), whipworm *T. trichiura* (0.276-0.331 mm/s) and hookworm (0.386-0.441 mm/s) in clean water have been calculated using Stokes' law as sedimentation velocity depends on egg size, difference in density between eggs and water, and the viscosity of water. In conclusion, the sedimentation velocity for *A. suum* was clearly faster in waste water as compared to tap-water. Most likely because eggs are trapped in large sized flocculated particles with a fast sedimentation rate. The sedimentation velocity of eggs in tap-water was lower than predicted by Stokes' law which could be related to the conformation of eggs. These results and findings from additional planned studies, incl. in flowing water, with helminths from pigs will be used to model the sedimentation of human helminth eggs in low quality irrigation water, since the size and density of eggs are very similar.